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Information Communication Technology Integration: Trained Secondary School Teachers' Dilemma

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Abstract

The use of Information and Communication technology (ICT) in schools in Pakistan has been increasing throughout the last ten years. This study explores the experiences of professionally qualified secondary school teachers regarding the integration of ICT in the classrooms for effective teaching and learning. A survey research design was adopted to conduct this study. The population consisted of teachers who have obtained their Bachelor and Master Degrees in Education from teacher education colleges during the last five years. A survey questionnaire was designed to collect data and SPSS 20 was used to analyze the data. The study discovered that most of the teachers lack the ability to integrate ICT in the classroom because they found themselves poorly prepared and not motivated to do so. The teachers who participated in this study presented solutions to the problems, such as investment in transforming schools into technologically friendly schools, professional development of teachers, improving support mechanism.

Keywords: Information and communication technology (ICT), Perceptions, professional development. Teacher education, teacher educators, school administration

Introduction:

Teacher education programmes in Pakistan have recently gone through an extensive evaluation process and this process lead to the broad changes currently being implemented in the teacher education programmes in Pakistan. The changes suggested were incorporated into the teacher education curriculum and pedagogical practices of teacher educators. The Higher Education Commission (HEC) in Pakistan in collaboration with teacher educators from all over the country designed a new teacher education curriculum (HEC, 2012.) The professional development programmes were designed for (EDC, n.d) teacher educators in public sector to transform the teacher education programmes and teacher educators' professional practices. This intervention has resulted in the development of ICT-related courses that are now taught to pre-service teachers. The professional development programmes for teacher educators enable them to learn how to plan and teach ICT integrated lessons in their classrooms. The use of technology by teacher educators exposes pre-service teachers to experience ICT integrated teaching and also to learn different technologies suitable to use in schools. A study conducted in Pakistan suggested that teachers' classroom teaching practices contribute to improving the quality of education (Memon, Joubish and Khurram, 2010) and studies from around the world suggest that technology does improve students' learning and increases their motivational level. The current report details the findings of research conducted to find out how trained teachers use ICT in their classroom and also highlights the factors that have been inhibiting their use of technology in their

classroom teaching. The teachers who participated in this study were Bachelor of Education (B.Ed.) and Master of Education (M.Ed.) graduates and all were teaching in secondary schools.

A report by UNESCO (2006) emphasized the need for good teacher education programmes for pre-service teachers and the availability of post-training support for in-service teachers as it eventually improves students' learning. A study conducted by Dean (2009) recommended revamping teacher education programmes in Pakistan as these programmes have proven ineffective in ensuring teachers use student-centered and learning-oriented teaching methods in their classrooms. Retallick & Farah (2005) found that the majority of teachers believe that their role is to ensure that students perform well in the government managed education examination boards (known as BISE.) This attitude is an important reason, among others, for teachers to refrain from using the pedagogies taught during their pre-service education programme.

Literature Review

The International ICT Literacy Panel (2007) defined the ICT literate teacher as someone who is able to use ICT appropriately to access, manage, integrate, evaluate, create and communicate information with others in order to participate effectively in society. This definition showed that teachers not only access information but also communicate information to students using different technologies in their classrooms that would make their classroom constructivists learning places. The ground reality is different from this suggested definition. Evans-Andris (1995) in her long study exploring teachers' use of ICT identified three ICT usage styles which are avoidance, integration, and technical specialization. She also discovered avoidance as the most dominant ICT usage style amongst teachers who spent hardly any time in planning and organising computer-related activities in their classrooms. Later studies have found similar results. In their studies Yildirim (2007) and Chigona & Chigona (2010) found the three primary uses of technology by teachers which are (1) preparing teaching notes and handouts; (2) preparing assessment worksheets, and (3) preparing teaching plans.

The instant access to information through media is influencing students' preferred learning styles and habits (Esteve, 2000). This influence is also shaping students' expectation of their teachers, how they teach and what resources they use in the classrooms. Reimers (2005) argues that teachers can make their learning interesting and effective by integrating ICT into their classroom teaching and assessment practices. This shows that students expect from their teachers to move away from the 'chalk and talk' method as it does not prepare them to face the challenges of the information-based economy. Harvey & Purnell (1995) suggested to develop technology embedded schools and classrooms where ICT is 'part and parcel' of all educational activities newly designed learning spaces require different sets of teaching strategies which are also supported by The Partnership for 21st Century Skills (2009).

The Ministry of Education, Government of Pakistan (2009) with the help of UNESCO and other international donor agencies such as United States Agency for International Development, Department of International Development, European Union and others conducted evaluative studies of teachers' skills and in their reports found that teachers are not trained to use ICT in classrooms. The suggestion given in these reports was to make ICT related courses part of teacher education programme. This newly introduced teacher education programme (HEC, 2012) has ICT an integral part which focuses on equipping pre-service teachers with necessary content and pedagogical skills. These include how to use different technologies and how to integrate them into classroom teaching. The ICT skills and planning and teaching ICT integrated lessons also became one of the National Professional Standards for Teachers in Pakistan (Ministry of Education, 2009). This standard (Standard 7) describes the skills that teachers should acquire during their teacher education course. The knowledge area includes how to operate different technologies that could be integrated into their classroom teaching; how to store and

share information with students; how to use computers and the internet as research tools. Pre-service teachers should have mastered the skills of making use of online resources in their area of specialization and be able to plan, teach and assess students' learning using technology (Ministry of Education, 2009)

Teachers are aware of the importance of ICT in teaching and learning and how it enhances students' learning (Siddiqui, 2007; Balanskat, Balamire & Kafal, 2007). A study by Bauer and Kenton (2005) found that teachers were highly skilled in using ICT but they were reluctant to integrate ICT in their teaching and learning processes. This reluctance is identified as inhibition (Dobozy, Bryer and Biehler, 2009), which they describe as teachers' inability in using the learned teaching methods in their classrooms and this under-performance could be intentional or unintentional. The inhibition could become permanent if teachers are not challenged to practice in their classrooms the learned teaching methodologies as such is against the expected behaviour of a qualified teacher. One important reason for this reluctance stands out among many others is teachers' unpreparedness. Brand (1997) has suggested that along with changes in teacher education programmes, a supportive mechanism for teachers that would motivate them to use technology in their daily teaching should be created if non-existent and strengthened if exist.

There are studies from different parts of the world that have identified many obstacles that hinder ICT usage by teachers in their classrooms. Studies in Turkey (Yildirim, 2007; Goktas, Yildirim, 2009), East Asia (Cheng and Townsend; 2000; Cheng, 2001; Cheng & Tam, 2007; Tien, 2004) and Pakistan (Mumtaz, 2002) have identified the following factors; poorly trained teachers, insufficient numbers of computers in schools, lack of technical support, access to the appropriate ICT resources, pressure to complete the required course work, non-existence of ICT integrated curriculum documents, lack of motivation and teachers perceptions of ICT's impact on their teaching and students' learning.

The use of ICT by teachers is dependent on how they view ICT's impact on their teaching efficacy and students' learning. The studies of Butzin (2001); Yuen, Law & Wong (2003); Yuen & Ma (2008) found a close relationship between teachers' use of ICT and their beliefs about ICT's impact on students' learning. Callister and Dunne (1992) in their study discovered that teachers' decisions regarding technology use in classrooms were dependent on how strongly they believed in its impact on their students' learning in their classrooms. Those teachers who are convinced that the technology will transform their classrooms into active learning places will use it more often and use ICT in a variety of ways. There are other researchers Manson (2000); Huang & Liaw (2005); Korte & Husing (2007); Becta (2008) who found teachers' lack of interest in embedding ICT in their teaching was because they did not see it having any visible impact on their students' learning. This also shows teachers' unwillingness even to experiment in teaching with technology. Casey and Rakes (2002) stated that such teachers should be exposed to technology and provided on the job training opportunities and ICT integrated professional training courses that would expose them to ICT, its use and its impact on their teaching and learning.

School leaders need either to develop a technical support mechanism or improve it if it already exists, as teachers need technical support such as using a particular hardware and a software package, setting up and the use of learning management system in the school (Veen et al 1992). The teachers who use computers regularly are aware of the importance of troubleshooting skills. A study by Maddin (1997) found that teachers' confidence to experiment in teaching with ICT improves when they can troubleshoot basic ICT problems. In another study carried out in Australia (Schiller 2003), teachers commented that on-site technical support plays an important part in their use of ICT in classrooms to ensure their ICT integrated teaching goes smoothly as planned by them. This study also found teachers' willingness to do experiment with technology to assist their teaching as they were learning how to use different technologies for both personal and professional use.

Planning a technology integrated lesson is time-consuming involving teachers planning not only on paper but also on computers, finding the best technology to use during their teaching, locating software packages and computer programmes whether online or in a DVD. [Gorder \(2008\)](#) suggested to school administrators and education leaders to be patient with teachers as they are more focused on teaching. The study also recommended that teachers need to be given more time to plan ICT integrated lessons. The technology integration is needed in the whole school education programme, its teaching, and assessment, and not just a lesson or a few lessons and it is critical for using ICT to improve learning as pointed out by [Sherer & Shea \(2002\)](#). The school curriculum documents developed by the Ministry of Education, Government of Pakistan of different subjects do not provide teachers with an ICT integrated curriculum guide. The teachers are left on their own to find ways how to do it and where to find resources.

Technology has transformed teaching and learning places. Schools and classrooms have been adapting and making changes to become technology friendly places. These adjustments require much investment on the part of the schools but this investment has not proved a game changer in classroom settings. [Dahmani \(2008\)](#) argued that very little research is done on the investment in ICT in schools and its impact on students' academic performance. Education is a provincial entity in Pakistan and there is very limited information shared with the public about spending on equipping schools with ICT. The focus of ICT investment is secondary schools where computer labs are established with very few computers. Other elements of a computer lab such as internet connectivity and supporting devices are not supplied ([Qadir & Hameed, 2005](#)). There is hardly any investment in primary schools and this makes teachers not confident to use technology in their schools. There is no information on ICT investments in private sector schools and its impact on students learning has not been studied.

Research Method

The researchers adopted a survey methodology because of their interest in investigating the frequency of factors that cause inhibition amongst secondary school professionally qualified teachers in the context of using learned teaching methodologies. The accessible population for this research was teachers with B.Ed and M.Ed degrees completed in the last 5 years and certified secondary school teachers. The researchers sent letters to 50 school administrators to seek permission to administer the tool, but only 20 schools responded. There were teachers teaching in these schools who did not have the teaching qualification. The total number of the accessible population consisted of 216 graduates. The purposive sampling technique was used to collect data from the research participants. The questionnaire was sent to 216 research participants and after giving several reminders 120 completed and returned the questionnaires. The results of the research are based on the responses of 120 accurately filled in questionnaires.

The participants and the researchers discussed the questions in a small group focus discussions after the questionnaire was completed by the research participants. The purpose of having focus group discussion was to explore further the teacher's perceptions about ICT; their skills of using ICT in their everyday lives and in their academic use; their experiences of teaching ICT integrated lessons in schools; and their willingness or unwillingness to experiment with different technologies for teaching purpose. The data was analyzed using SPSS 20. Descriptive statistics were used to analyze responses received from the research participants.

Data Analysis and Discussion

From a total of 120 research respondents, 75% believe that they are not prepared for using technology in their classrooms and therefore they lack the necessary skills of integrating technology into their teaching. This could be due to the fact that teachers in Pakistan have limited access to technology at home and therefore they cannot take personal initiatives in developing technology related skills for its

integration into teaching sessions. Although teacher educators at pre-service teacher education programmes integrate technology for teaching their courses, the focus on developing pre-service teachers' technology-related skills for its effective use for classroom instructional purposes is not emphasized. The pre-service teachers are introduced to the usage of technology for effective classroom teaching by observing teacher educators using it and by being encouraged to enhance their technology relating skills by using it for classroom presentations. These exercises are not sufficient for developing their technological related skills. Therefore when these teachers enter the teaching profession, they find themselves handicapped in managing technology in the classroom. Only 21.66% of trained secondary school teachers find themselves prepared to teach ICT-based lessons. This could be due to a personal interest in using technology in the classroom, learning during a teacher education programme or developing technological skills as part of in-service teacher education programmes. The level of use of ICT in the pre-service teacher education programmes varies from minimum to moderate usage. The lack of use of ICT by teacher educators does not equip pre-service teachers to use technology for better teaching in the future. Therefore teacher education programme should be designed in a manner that regulates the habits of usage of technology considering the learning styles of student teachers (Brand, 1997). This has been overlooked to some extent in teacher education programmes offered by public or private sector in Pakistan. Pre-service teachers are encouraged to integrate technology into teaching during the practicum or for making classroom presentations assisted by technical support. This initiative familiarizes them with the use of technology in the classroom but does not prepare them to handle it independently.

The data collected from the study reveals that 68.33% secondary school teachers are of the opinion that they lack expertise in handling technology. This could be due to a number of factors such as non-accessibility of technology at home or at schools to learn from trial and error and gain expertise in its use. Secondly, it could be due to the negligence by the developers of teacher education programme of including ICT as part of teacher education programmes. Students expect teachers to integrate technology in classroom to help them to develop the skills required to live and work in the present century. In Pakistan students' use of technology for social and communication purposes is far better than their teachers as it could be seen in other parts of the world too. Thus teachers should develop expertise for integrating technology in teaching to prepare students to face the challenges of technological based economic growth (Partnership for 21st-century skills, 2007, 2004). Though teaching in Pakistan remains largely dependent on 'chalk and talk' methods, as was highlighted by many participants in the focus group discussion. From a total population of 120 secondary school teachers, 16.66% believed that they had the necessary expertise in using technology in the classroom whereas 12.5% of the secondary school teachers were not sure of their expertise in handling technology in teaching.

A total of 66.66% secondary schools teachers are of the opinion that they are not given on-job training for using technology for classes. They have the desire and motivation to conduct technology-based sessions but find them ill-prepared. The willingness towards learning on the part of teachers is also obvious from the calculated responses provided they are trained on the job to acquire the theoretical knowledge and practical skills of integrating instructional technology into their teaching. The 25.83% secondary school teachers are of the opinion that they are given sufficient opportunities on the job to develop and enhance their technological integration skills for efficient teaching-learning purposes whereas 7.5% of the research participants had no opinion about the statement. Professional development sessions for personnel managing the computer labs/computing facilities and teachers are not considered important in schools. Brands (1997), has suggested that teachers must be given specific time in their daily routines to practice technology base teaching.

The data collected for research purposes revealed that 60% of secondary school teachers were of the opinion that they hardly ever use technology for instructional purposes in the classroom. Data collected is supportive of a minimum inclination of teachers towards using technology in the classroom as it requires time, effort and energy. However, 30.83% of secondary school teachers were of the viewpoint that they make deliberate efforts to integrate technology in their teaching sessions by either making individual efforts or seeking the support of colleagues whereas 9.16% had no opinion relating the use of technology for instructional purposes.

The respondents experienced non-availability of expertise (58.33%) in using technology for instructional purposes though schools are equipped with multimedia, desktop computers, internet connection, and educational information stored on DVDs or CDs. The staffs managing these facilities lack expertise in supporting teachers to use these available facilities in their classrooms teaching. This could be due to the fact that the computer lab staffs available in schools do not have the necessary skills to support teachers by suggesting ways to make maximum use of the available technology in their classrooms. The experience of 31.66% teachers was different as in their opinion schools do provide them with satisfactory assistance to integrated technology in the classroom. A further 10% of the research respondents remained undecided about the statement.

A total of 55.83% of the research participants were of the opinion that if teachers accept the challenge of integrating technology into their teaching their efforts are not appreciated and so they feel demotivated and do not make the next attempt. However, 30% of the respondents experienced appreciation and acknowledgment for using technology in teaching. This could have been from administrators, colleagues, parents or students whereas 14.16% did not realize whether their efforts of integration of technology for instructional purposes were evidently appreciated or ignored.

Only 55% of respondents were of the view the school administrators take a keen interest in developing a technology friendly culture in the schools whereas 35% believed that such a culture already prevails in schools and 10% of the respondents remained undecided in relation to the technological culture in the school environment. The school administrators must invest in creating a technology friendly culture in the schools and provide incentives to encourage teachers to use instructional technology in their classroom teaching. The incentives suggested by [Groff and Mouza \(2008\)](#) are continuous professional development opportunities, creating teacher forums in school to discuss the technology-based teaching experiences, professional support and additional time for working out the challenge of technology-based teaching. The use of instructional technology in the classroom will only be possible when the teachers are supported by an administrative structure as well as the teachers' own conviction of its positive impact on the learning of the students. Technology based teaching has gained popularity in the last two decades. Teachers' use of technology is mainly confined to planning purposes and its integrating for instructional purposes has been overlooked ([Groff and Mouza, 2008](#)). The data collected for the study confirms this notion as 47.5% of the respondents used technology to plan their teaching session as it could be done in own sweet time, no embarrassment in public in case of mismanagement, greater personal opportunities to be independently skilled in handling technology and so on, whereas 34.16% took a further step and used it for instructional purposes. However, 18.33% remained confused whether or not to use technology for teaching/learning purposes and kept concentrating on the implication of its use while planning for teaching or implement plan in the classroom.

Table I.1

S. No.	Teachers' are expected to integrate technology for instructional purposes but...	Agree	Undecided	Disagree	Total
1.	They are not prepared for the usage of technology for effective teaching.	90	4	26	120
2.	Teachers lack expertise in handling technology.	82	15	20	120
3.	Teachers are not given on-job training for using technology for classes.	80	9	31	120
4.	Teachers hardly use technology for instructional purposes in the classroom.	72	11	37	120
5.	Schools don't have expertise to support teachers using technology.	70	12	38	120
6.	The efforts of teachers using technology are usually not acknowledged.	67	17	36	120
7.	School administration doesn't establish technology friendly culture.	66	12	42	120
8.	Teacher use technology for planning purposes only.	57	22	41	120

Conclusion and Recommendations

The use of ICT for classroom teaching is supported by an overwhelming majority of education policy makers, teacher educators, school administrators and teachers. Thus trained secondary school teachers are not only facilitated but encouraged to use technologically integrated teaching strategies for classroom teaching purposes. This is due to the fact that all the stakeholders firmly believe that technologically integrated teaching strategies are a way to move from 'learning to pass' to 'learning for learn'. Data from the current study highlighted the fact that due attention is still lacking from the key stakeholders for the integration of ICT for classroom teaching purposes. Teachers are of the opinion that they are neither prepared nor supported by school administrators to integrate technology into their teaching. Therefore they lack the ICT-related skills and are deprived of mastering those skills by the lack of ICT professionals in schools and few opportunities for participating in-service training sessions. This is a serious concern for all the stakeholders thus it is recommended that ICT should be a core course in the curriculum of teacher education programmes; school administration must provide ICT related facilities through continuous professional development opportunities for teachers who must be encouraged, motivated and facilitated to participate in those training programmes. Teachers must be equipped with technological skills to bring innovation in their teaching practices and achieve expected outcomes through relevant content using ICT in the classrooms to cater the needs of a 21st-century generation of learners in their classrooms.

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